UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/589,050	OHMURO ET AL.
	Examiner	Art Unit	
	JOEL F. BRUTUS	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *01 February 2010*.
2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-20,23 and 24* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-20,23 and 24* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All   b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date *3/31/2010*.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1, 17 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by

Jacobson et al (US Pat: 4,787,252).

Regarding claims 1, 17 and 23, Jacobson et al teach a flow meter that includes a

mode selector operative to select one of two or more operating modes based upon

analysis of the processed received signals [see column 8 lines 50-55 and see figs 1-4]

that anticipates the claimed invention. Jacobson et al teach a signal processing circuitry

26, 28 which amplifies and conditions a received signal received from one or more

transducers 2 and 3 [see column 3 lines 55-68 and column 4 lines 1-14].

Jacobson et al further teach a processor that starts operation in a first or START

mode designated MODE 1 which will generally be a transit time measurement mode

[see column 8 lines 58-67 and column 9 lines 1-3]. FIG. 4 teaches a mode selector 50

and a preliminary determination 58 is made whether a signal was received. If not, the

mode selector 50 switches mode at 60 to effect a different processing protocol which

may be more amenable to measuring the actual flow conditions [see column 9 lines 4-

13]. This implies the step of determining reliability of the current method and also

selecting a measuring method different than the transit time mode (emphasis added).

Jacobson et al teach a determination is made whether the signal to noise ratio is greater than a pre-set threshold; if the noise exceeds the level then the mode is changed [see column 9 lines 20-30 and lines 40-50]. As described here, Jacobson et al check the sufficiency of the reliability by comparing the current noise level to a pre-set level and switch the current to another mode using the mode selector (emphasis added).

Jacobson et al teach a flow meter or flow path intervalometer, transmits a transmission signal sampled in phase quadrature (which can be used as a circuitry to detect Doppler frequency, emphasis added) and transformed to determine its frequency domain representation, and the device derives local flow rate information from Doppler information, a plurality of transducers are arranged to provide a number of sampling paths across the conduit, and the flow meter varies the range gating interval for the signal received along each path to derive a Doppler frequency, hence flow rate [see abstract]. Jacobson et al teach a sampling unit 32 which is a circuit that can be used as a first circuit to detect Doppler frequency (emphasis added).

Jacobson et al may not specifically refer to transducers 2 and 3 as first and second transducers. However, Jacobson et al disclose received signals to determine the mode come from transducer 2 and 3 which can be first and second or vice versa to determine Doppler method by detecting Doppler frequency or transit time method by performing signal amplification as described above (emphasis added)

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 2-16, 18-20 and 24 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Jacobson et al (US Pat: 4,787,252) in view of Akiyama (US Pat:

5,557,148).

Regarding claims 2, all other limitations are taught as set forth by the above

teaching.

Jacobson et al don't specifically mention the reliability index value is smaller than

a set value.

However, Jacobson et al also teach once a set of flow values has been derived,

the processor computes the standard deviation of the derived values of the parameter,

and compares it to a threshold acceptable level of variation [see fig 4, column 9 lines

41-60, lines 20-30 and lines 40-50] to select a different mode.

Nevertheless, Akiyama teaches establishing a threshold in advance for reception

time signal [see column 9 lines 10-20]; measurement mode for measuring flow rate of a

fluid based on a reference value established by a first self learning capability [see

column 9 lines 54-60] and a comparator that compares a reception signal and

predetermined level signal and it used to indicate the operation of a first learning

capability [see column 10 lines 49-56 and fig 9].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify the Jacobson et al by setting a threshold so that if the derived value is smaller than the threshold or combine Jacobson et al with Akiyama by using the teaching of establishing the threshold in advance as taught by Akiyama to select a different mode or measuring method; in order to provide a better evaluation and to select the method that would provide the best possible flow measurement.

Regarding claims 13, 24 and 18, all other limitations are taught as set forth by the above teaching.

Jacobson et al don't explicitly mention obtaining an index value of each method and selecting a measuring method having a larger value of index.

However, Jacobson et al teach a microprocessor that set ups a threshold-selection approach [see column 7 lines 19-30] and making a determination by comparing correlation value; the threshold value may be a variable value [see column 7 lines 32- 36].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify Jacobson et al by using the microprocessor as taught by Jacobson et al and assign an index value to the Doppler mode and transit time mode, comparing these values and select the method with the larger value; in order to evaluate the procedure and to make necessary modifications by selecting the best possible method.

Regarding claim 16, all other limitations are taught as set forth by the above

teaching.

Jacobson et al do teach determining if index value is larger than a predetermined

value [see column 9 lines 13-31 and lines 40-67] to switch the mode.

Jacobson et al don't mention outputting abnormality when the value is smaller

than the predetermined value.

However, Jacobson et al teach a microprocessor that set ups a threshold-

selection approach [see column 7 lines 19-30] and making a determination by

comparing correlation value; the threshold value may be a variable value [see column 7

lines 32- 36]. Jacobson et al describe signals as noisy which are smaller than a

predetermined value and further disclose switching the mode when the noise exceeds

the predetermined or threshold value [see columns 9-10].

Therefore, one with ordinary skill in the art at the time the invention was made

would have been motivated to modify Jacobson et al by using the microprocessor to set

up the threshold value that if a detected value is smaller than the threshold value to

output abnormality or noise; in order to increase visualization.

Regarding claim 3-8, and 14-15, all other limitations are taught as set forth by the

above teaching.

Jacobson et al further teach fast Fourier transform calculation to derive frequency

data [see column 9 lines 41-60]; a received signal frequency component of greatest

magnitude is then compared to the frequency of the transmitted signal, to ascertain its

Doppler shift, and the Doppler shift is converted to a flow output [see column 11 lines

58-68 and column 12 lines 1-5].

Jacobson et al don't explicitly teach a predetermined power value; predetermined

amplitude value associated with a ratio.

However, Jacobson et al teach transmitted signal is provided by a transmission

signal generator 22, the output of which is amplified by a power amplifier 24 and

connected through multiplexer 12 to an appropriate one or more of the transducers 2,3.

Similarly, the received signal is connected through the receiver multiplexer 14 to a

receiver amplifier 26 having an automatic gain control loop 28 so as to provide a

conditioned output signal on line 30 representative of the received signal. The gain is

controlled to be within the input range of an analog-to-digital converter [see column 4

lines 2-13 and see fig 3 and 5].

Therefore, one with ordinary skill in the art at the time the invention was made

would have been motivated to modify Jacobson et al by using the Fast Fourier

transform as taught by Jacobson et al above to obtain index value as a ratio of a power

spectrum of a Doppler frequency and the microprocessor to set a predetermined power

and amplitude value associated with the ratio; for the purpose of evaluating flow signal

with accuracy and to switch to the measurement flow method that would provide a

better flow measurement.

Regarding claims 9-12, all other limitations are taught as set forth by the above teaching.

Jacobson et al don't explicitly mention counting the number of the correct measurement points and change the method is the number is smaller than a threshold.

However, Jacobson et al teach change the existing method to a different mode if exceeds a predetermined value; Alternatively if at step 74 sigma has been determined to be acceptable, the existing mode is deemed to produce meaningful data and the derived flow parameter measurements are simply delivered as an output along line 70, with the processor continuing to run in the existing processing mode. In this case, at 76 control returns to initialize the data transmission and reception cycle for another round of measurements [see column 9 lines 62-67]. Jacobson et al teach fast fourier transform to perform calculation to derive frequency data [see column 9 lines 58-60].

Akiyama teaches establishing a threshold in advance for reception time signal [see column 9 lines 10-20]; measurement mode for measuring flow rate of a fluid based on a reference value established by a first self learning capability [see column 9 lines 54-60] and a comparator that compares a reception signal and predetermined level signal and it used to indicate the operation of a first learning capability [see column 10 lines 49-56 and fig 9].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify Jacobson et al by count the number of measurements and compare it to a threshold that would set by the microprocessor or

combine with Akiyama by; in order to provide meaningful evaluation of the current flow measurement method.

Regarding claims 19-20, all other limitations are taught as set forth by the above teaching.

Jacobson et al don't explicitly mention a computer readable medium with a program to execute the method steps.

However, Jacobson et al a microprocessor capable of running a program such as the method claimed (emphasis added), a RAM and memory [see column 4 lines 15-36].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to use the RAM or memory to store a program with a set of program codes executing the steps of the method as claimed that can be run by the microprocessor as taught by Jacobson et al; for the purpose of having the information available for later use in doctor's office, clinics, nursing homes etc...

Response to Arguments

5.   Applicant's arguments with respect to claims 1-20 and 23-24 have been considered but are moot in view of the new ground(s) of rejection.

The 101 and 112 rejection of the previous action are moot due to the amendments to the claims.

Applicant argues that Jacobson et al don't teach first and second circuits for performing signal amplification from a reception wave received from a second

transducer; and a first circuit for detecting Doppler frequency from a reception wave received from a first transducer.

The examiner disagrees because Jacobson et al teach a signal processing circuitry 26, 28 which amplifies and conditions a received signal received from one or more transducers 2 and 3 [see column 3 lines 55-68 and column 4 lines 1-14].

Jacobson et al teach a flow meter or flow path intervalometer, transmits a transmission signal sampled in phase quadrature (which can be used as a circuitry to detect Doppler frequency, emphasis added) and transformed to determine its frequency domain representation, and the device derives local flow rate information from Doppler information, a plurality of transducers are arranged to provide a number of sampling paths across the conduit, and the flow meter varies the range gating interval for the signal received along each path to derive a Doppler frequency, hence flow rate [see abstract]. Jacobson et al teach a sampling unit 32 which is a circuit that can be used as a first circuit to detect Doppler frequency (emphasis added).

Jacobson et al may not specifically refer to transducers 2 and 3 as first and second transducers. However, Jacobson et al disclose received signals to determine the mode come from transducer 2 and 3 which can be first and second or vice versa to determine Doppler method by detecting Doppler frequency or transit time method by performing signal amplification as described above (emphasis added)

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL F. BRUTUS whose telephone number is (571)270-3847. The examiner can normally be reached on Mon-Fri 7:30 AM to 5:00 PM (Off alternative Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. F. B./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768